IN THE CLAIMS

Current Listing Of Claims:

1-5. (Canceled)

6. (Currently Amended) ~~The apparatus for wet processing individual wafers of claim 5 [[1]], further comprising:~~ An apparatus for wet processing the device side of individual wafers, comprising:

an acoustic energy generator comprising a platter having a frontside and a backside, and one or more acoustic wave transducers mounted on the platter backside;

a wafer bracket for positioning a wafer having a device side and a non-device side over the acoustic energy generator such that the device side of the wafer is distal to the acoustic energy generator and the non-device side of the wafer is proximate to the acoustic energy generator;

a device for rotating the wafer bracket relative to the platter;

a first liquid dispenser for flowing a first liquid between and contacting both said acoustic energy generator and said wafer, so that the first liquid can transfer acoustic energy from the acoustic energy generator to the non-device side of the wafer; and

a second liquid dispenser for flowing a processing liquid from the second liquid dispenser and onto said device side of the wafer;

wherein the acoustic energy that can be transferred to the non-device side of the wafer can be transferred to the device side of the wafer having a frequency and intensity at the device side of the wafer to improve the cleaning performance of the processing liquid on the device side of the wafer, while also minimizing an associated risk of damage to devices on the wafer due to the acoustic energy acting on the device side of the wafer.

7-9. (Canceled)

10. (Previously Presented) The apparatus for wet processing individual wafers of claim 6, wherein the platter is positioned parallel to the wafer surface, with the platter front side facing the wafer non-device side.

11. (Original) The apparatus for wet processing individual wafers of claim 10, wherein the platter diameter is at least 95% the diameter of the wafer.

12. (Original) The apparatus for wet processing individual wafers of claim 11, wherein the one or more acoustic wave transducers are mounted on the platter backside to cover 50-100% of the platter backside area.

13. (Canceled)

14. (Previously Presented) The apparatus for wet processing individual wafers of claim 6, wherein the one or more acoustic wave transducers cover the diameter of a wafer.

15. (Previously Presented) The apparatus for wet processing individual wafers of claim 6, wherein the one or more acoustic wave transducers provide acoustic energy to cover 50-100% of the non-device side of the wafer.

16-45. (Canceled)

46. (Currently Amended) ~~The apparatus for wet processing individual wafers of claim 45~~ An apparatus for wet processing the device side of individual wafers, comprising:

an acoustic energy generator comprising a platter having a frontside and a backside, and a plurality of megasonic piezoelectric transducers attached to the backside of the platter;

a wafer bracket for positioning a wafer having a device side and a non-device side over the acoustic energy generator, wherein the device side of the wafer is distal to the acoustic energy generator and the non-device side of the wafer is proximate to the acoustic energy generator, and the non-device side of the wafer is positioned substantially parallel to and over the platter front side so that a gap is formed between said wafer non-device side and said platter frontside, wherein the wafer bracket is rotatable relative to the platter, and wherein the plurality of megasonic piezoelectric transducers ~~transducer areas~~ provide between 90-100% coverage of the wafer non-device side;

a first liquid dispenser comprising a liquid feed port for flowing a first liquid between said acoustic energy generator and said wafer such that the first liquid fills the gap between the frontside of the platter and the non-device side of the wafer in order to transfer acoustic energy from the acoustic energy generator to the non-device side of the wafer;

a second liquid dispenser comprising a nozzle for flowing a processing liquid from the second liquid dispenser and onto said device side of the wafer;

wherein said transducers can apply megasonic energy to said platter, which transfers the megasonic energy to said liquid in said gap, which transfers to said non-device side of the wafer, which transfers to the device side of the wafer, and then, transfers the megasonic energy to the processing fluid on the device side of the wafer; and

wherein the acoustic energy that can be transferred to the non-device side of the wafer can be transferred to the device side of the wafer having a frequency and intensity at the device side of the wafer to improve the cleaning performance of the processing liquid on the device side of the wafer, while also minimizing an associated risk of damage to devices on the wafer due to the acoustic energy acting on the device side of the wafer.

47-51. (Canceled)

52. (Currently Amended) ~~The apparatus of claim 45~~ An apparatus for wet processing the device side of individual wafers, comprising:

an acoustic energy generator comprising a platter having a frontside and a backside, and a plurality of megasonic piezoelectric transducers attached to the backside of the platter;

a wafer bracket for positioning a wafer having a device side and a non-device side over the acoustic energy generator, wherein the device side of the wafer is distal to the acoustic energy generator and the non-device side of the wafer is proximate to the acoustic energy generator, and the non-device side of the wafer is positioned substantially parallel to and over the platter front side so that a gap is formed between said wafer non-device side and said platter frontside, wherein the wafer bracket is capable of rotation up to 6000 rpm relative to the platter;

a first liquid dispenser comprising a liquid feed port for flowing a first liquid between said acoustic energy generator and said wafer such that the first liquid fills the gap between the frontside of the platter and the non-device side of the wafer in order to transfer acoustic energy from the acoustic energy generator to the non-device side of the wafer;

a second liquid dispenser comprising a nozzle for flowing a processing liquid from the second liquid dispenser and onto said device side of the wafer;

wherein said transducers can apply megasonic energy to said platter, which transfers the megasonic energy to said liquid in said gap, which transfers to said non-device side of the wafer, which transfers to the device side of the wafer, and then, transfers the megasonic energy to the processing fluid on the device side of the wafer; and

wherein the acoustic energy that can be transferred to the non-device side of the wafer can be transferred to the device side of the wafer having a frequency and intensity at the device side of the wafer to improve the cleaning performance of the processing liquid on the device side of the wafer, while also minimizing an associated risk of damage to devices on the wafer due to the acoustic energy acting on the device side of the wafer.

53-227. (Canceled).

228. (Currently Amended) ~~The apparatus for wet processing individual wafers of claim 45,~~ An apparatus for wet processing the device side of individual wafers, comprising:

an acoustic energy generator comprising a platter having a frontside and a backside, and a plurality of megasonic piezoelectric transducers attached to the backside of the platter;

a wafer bracket for positioning a wafer having a device side and a non-device side over the acoustic energy generator, wherein the device side of the wafer is distal to the acoustic energy generator and the non-device side of the wafer is proximate to the acoustic energy generator, and the non-device side of the wafer is positioned substantially parallel to and over the platter front side so that a gap is formed between said wafer non-device side and said platter frontside, wherein the wafer bracket is rotatable relative to the platter, and wherein the plurality of megasonic piezoelectric transducers cover greater than 80% of the platter backside area;

a first liquid dispenser comprising a liquid feed port for flowing a first liquid between said acoustic energy generator and said wafer such that the first liquid fills the gap between the frontside of the platter and the non-device side of the wafer in order to transfer acoustic energy from the acoustic energy generator to the non-device side of the wafer;

a second liquid dispenser comprising a nozzle for flowing a processing liquid from the second liquid dispenser and onto said device side of the wafer;

wherein said transducers can apply megasonic energy to said platter, which transfers the megasonic energy to said liquid in said gap, which transfers to said non-device side of the wafer, which transfers to the device side of the wafer, and then, transfers the megasonic energy to the processing fluid on the device side of the wafer; and

wherein the acoustic energy that can be transferred to the non-device side of the wafer can be transferred to the device side of the wafer having a frequency and intensity at the device side of the wafer to improve the cleaning performance of the processing liquid on the device side of the wafer, while also minimizing an associated risk of damage to devices on the wafer due to the acoustic energy acting on the device side of the wafer.

229-241. (Canceled)

242. (New) An apparatus for wet processing a substrate comprising:

a platter having a frontside and a backside;

one or more acoustic wave transducers mounted on the platter backside;

a bracket for positioning a substrate over the platter, the bracket rotatable relative to the platter;

a first liquid dispenser for flowing a first liquid between the platter and the substrate; and

a second liquid dispenser above the platter for flowing a processing liquid from the second liquid dispenser and onto the substrate.

243. (New) The apparatus of claim 242 wherein the one or more acoustic wave transducers mounted on the platter backside cover 50 – 100% of the platter backside area.

244. (New) The apparatus of claim 242 wherein the plurality of acoustic wave transducers are capable of simultaneously transmitting different resonant frequencies.

245. (New) The apparatus of claim 244 wherein the plurality of acoustic wave transducers comprise a plurality of piezoelectric transducers having different resonant frequencies, and the intensities of the plurality of piezoelectric transducers are separately controllable.

246. (New) The apparatus of claim 242 further comprising a through hole in the platter.

247. (New) The apparatus of claim 246 wherein the through hole is slightly offset from the center of the platter by a distance in the range of greater than zero and up to a few millimeters.

248. (New) The apparatus of claim 242 wherein the bracket is capable of rotation up to 6000 rpm relative to the platter.

249. (New) The apparatus of claim 242 further comprising a device for rotating the bracket relative to the platter.